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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/526,558	03/16/2000	Hiroshi Toriya	0557-4939-2X	1979

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EXAMINER	
SEALEY, LANCE W	

ART UNIT	PAPER NUMBER
2671	11

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/526,558	Applicant(s) TORIYA ET AL.	
	Examiner Lance W. Sealey	Art Unit 2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *11-14* is/are allowed.

6)☒ Claim(s) *1,2,6 and 7* is/are rejected.

7)☒ Claim(s) *3-5 and 8-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Allowable Subject Matter

1. Claims 11-14 are allowed, and claims 3-5 and 8-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

2. The following is a statement of reasons for the indication of allowable subject matter: No prior art anticipates or suggests, in a method of generating a free-form surface model, in the process of applying linear transformation to a lattice polygon model, generating the vertices of the freeform surface model by utilizing the rounding information, as disclosed in claims 3, 8, 11 and 13; or reconstructing the lattice polygon model from the free-form surface model by utilizing an inverse transformation of the linear transformation, as disclosed in claims 5 and 10; or the rounding information controlling how close the vertices and edges of the free-form surface model are to the respective vertices an edges of the polygon surface model, as disclosed in claims 12 and 14. Claims 4 and 9 are objected to because they depend on claims 3 and 8, respectively.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable by Chadwick et al., "Layered Construction for Deformable Animated Characters ("Chadwick") in view of Foley et al., Computer Graphics Principles and Practice: Second Edition in C ("Foley").

5. Chadwick, in disclosing a methodology for creating and animating computer generated characters, also discloses a method of generating a free-form surface model, comprising:

applying linear transformation to a lattice model to generate vertices of a free-form surface model corresponding to respective vertices of the lattice polygon model (disclosed at p.247, first paragraph, left column: the elements "linear transformation", "lattice model", "vertices", "free-form surface model" are disclosed in the sentence, "By manipulating the control points which form the lattice, the cubic solid is deformed. The resulting vertex positions of the deformed object are computed by using the deformed lattice control points in the hyperpatch blending functions and then sampling at the parametric weights associated with the original undeformed vertices.")

and generating control points of cubic Bezier curves that connect the vertices of the free-form surface model, and that correspond to respective edges of the lattice polygon model.
(p.246, "4. Muscle and Fatty Tissue Layer" first paragraph: "Muscles are represented by a pair of FFDs. This provides 7 planes of control points orthogonal to the joint link axis: four planes for each FFD (cubic bezier) with one plane shared as the adjoining connection between deformations.")

6. However, Chadwick does not disclose a polygon model. This is disclosed by the Foley polygon mesh described at p.472, second paragraph. The Merriam-Webster's Collegiate Dictionary defines a lattice as "a regular geometrical arrangement of points or objects over an area or in space"; based on this definition, a mesh is a lattice.

7. Therefore, it would have been obvious to one of ordinary skill in the art at the time this invention was made to incorporate the Foley mesh in the Chadwick method. This would allow for smooth curves and surfaces (Foley, p.471, first sentence).

8. Therefore, in view of the foregoing, claims 1 and 6 are rejected as being unpatentable under 35 U.S.C. 103(a).

9. Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chadwick in view of Foley and further in view of Konno (U.S. Pat. No. 6,198,979).

10. Chadwick does not disclose interpolating Gregory patches into a mesh comprised of the cubic Bezier curves. However, this element is disclosed by the Konno method and system for generating free-form surfaces with NURBS boundary Gregory patches at col.6, ll.34-37.

11. Therefore, it would have been obvious to one of ordinary skill in the art at the time this invention was made to incorporate the Konno method in the Chadwick-Foley method. This would allow for smoother curves in the free-form surface (Konno, col.2, ll.18-25).

12. Therefore, in view of the foregoing, claims 2 and 7 are rejected as being unpatentable under 35 U.S.C. 103.

Response to Remarks

13. In response to the applicant's assertions that Singh does not disclose a lattice polygon model, Singh has been replaced with Chadwick and Foley. Also, since the applicants' amendments amounted to minor syntactical changes, this rejection is non-final.

Conclusion

Any inquiry concerning this communication or earlier communications from the Office should be directed to the examiner, Lance Sealey, whose telephone number is (703) 305-0026. He can be reached from 7:00 am-3:30 pm Monday-Friday EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman, can be reached at (703) 305-9798.

Any response to this action should be mailed to:

MS Non-Fee Amendment

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

or faxed to:

(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office at (703) 306-0377.

MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600